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Abstract

The book "Medical Image Processing" was created to fulfill the educational requirements of related courses at the university level. Its main objective is to provide an applied introduction to the fundamental fields of medical image processing. The book covers the basic principles of medical image processing, provides numerical examples for readers to solve, introduces research and clinical applications, and implements selected image processing techniques using MATLAB. The book is intended for students, teachers, researchers, and scientists who want to learn the theory and application of basic medical image processing techniques in a simple and understandable way. The book comprises 12 Chapters that can serve as independent weekly lectures for

a university course module. Each Chapter, except for the Introduction, is divided into five sections: Section A (Theory) - Introduction to the basic principles, Section B (Numerical exercises) - Solving small scale numerical exercises, Section C (Applications) - Research and clinical applications, Section D (Lab) - Implementation of examples in MATLAB code, Section E (Self assessment questions) - Summary and review of the material of the Chapter through self assessment questions. Additionally, the book presents the basic theory and applications of the most popular medical imaging systems. Upon completing the book, the reader will have a comprehensive understanding of the fundamental imaging systems used in clinical and research practice.

